

The Sanitation Facilities Improvement Based on Social and Cultural Consideration in Kelurahan Batununggal, Bandung City, Indonesia

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Abstract

The increasing number of population in big cities in Indonesia especially in Bandung City that mostly caused by urbanization has brought a demand to provide many kinds of facilities for their citizen which already influence the increasing land use demand. Unfortunately, the increasing of facilities demand is not supported by land provision and it causes a further land conversion. The impact from land conversion can be viewed from the growth of slum settlements area in several occupancy locations such as in along side of Cikapundung River. Based on data of West Java Environmental Protection Agency in 2003, 141,264 Ha from 183,105 Ha of total area in Kelurahan Batununggal in Cikapundung Area is used for settlement area. The growth of slum settlements area is triggered by poverty and as a consequences from not fulfilled many kinds of basically needs such as the availability of shelter, clean water, health sanitation systems has stimulated people especially poor people to establish buildings alongside of Cikapundung River. Based on that, the growth of slum settlements area has brought a negative impact toward its surrounding environment. Moreover with social and cultural behavior from their community which dispose their wastewater and solid waste directly into Cikapundung River as consequences from a limited of sanitation systems in that area and it causing high water pollution in Cikapundung River. Because of that, in order to improve the water environment and quality of life of the local community, West Java Environmental Protection Agency together with the local community build a Community-Based Sewerage System with Tangki AG.

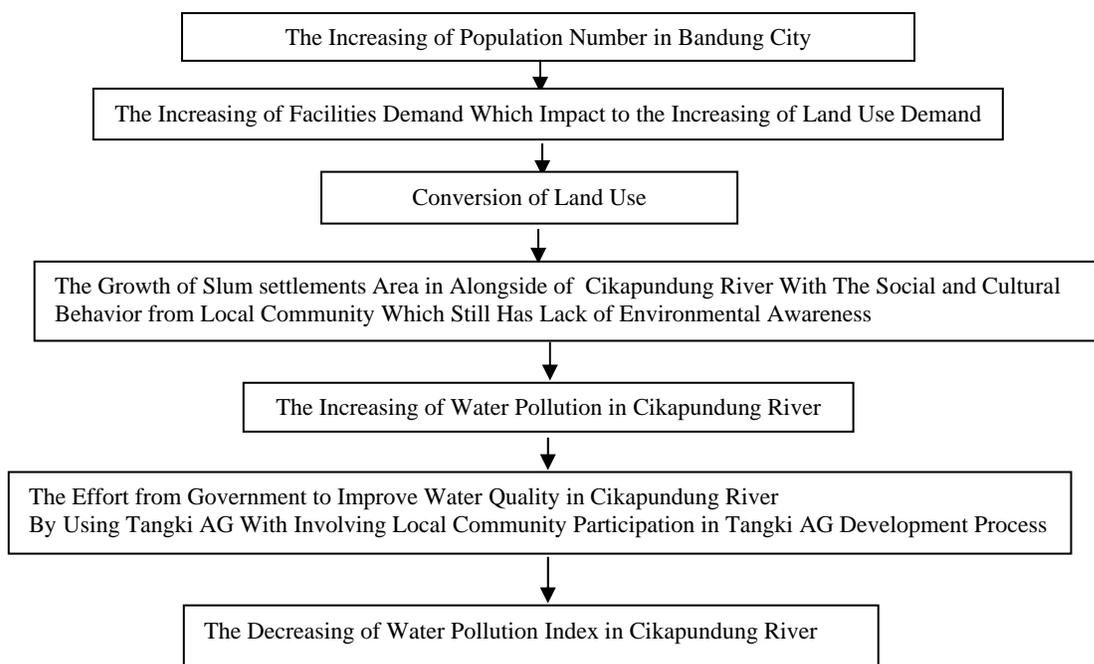
Keywords: Conversion Land, Slum Settlements Area, Social and Cultural Behavior, Tangki AG

1. Introduction

The number of population in Bandung City has been increasing since 1960 and it is showed from the data which from 986.880 people in 1959 becomes 1.028.245 people in 1960. Nowadays, the increasing number of population is increased about 4,8% per year and mostly caused by urbanization. The impact from urbanization causes the high number of unemployment in Bandung City because most people who do urbanization are not educated and do not have any skills to work. To survive, they work at informal sectors such as being a beggar, labor, street singer, maid etc. Because of the low income, they cannot afford to have and rent a house and to fulfill their basically

needs like a shelter, they establish buildings in many occupancy locations such as alongside river and alongside rain trail which in further becomes a slum settlement area. Since then, the growth of slum settlements area has become a main problem in Bandung City.

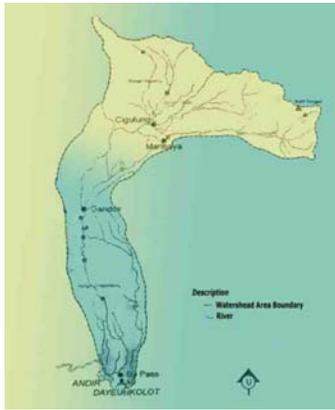
The slum settlements area is defined as a settlement which has a high density people (more than 500 people per Ha) with lower income and lack of infrastructures such as clean water, health sanitation systems, other social infrastructures such as school, house of worship, clinic etc. Furthermore with that condition has influenced to the environment like an environmental degradation and it is triggered by social and cultural behavior from their resident. The correlation between environmental physical condition and social and culture in Bandung City especially in Cikapundung Area can be viewed from the conceptual frame in Picture 1.



Picture 1. Conceptual Frame

2. Social and cultural consideration

One of the other occupancy locations that people used as a settlement area in Bandung City is Cikapundung River as one of Citarum tributary rivers. Cikapundung River has potency and function as a municipal flushing and natural drainage, raw material for drinking water, electrical powerplant and also as tourism object. Cikapundung River with the length is 28 km which 15,50 km of the river passes across Bandung city, partially (10,57 km) passes densely-populated settlement area which occupied by 1.058 buildings and 71.875 people. Because of that, Cikapundung River has much kind of problems especially in environmental aspect and it is happened because of unbalanced between carrying capacities and the number of population. The description about the location and settlements area in alongside of Cikapundung River can be viewed in Picture 2 and 3.

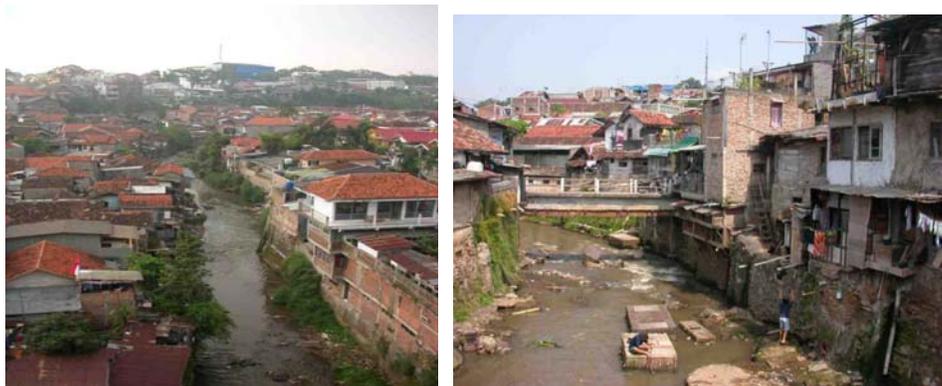


Picture 2. Cikapundung River Map



Picture 3. The Condition of Settlements Area In Alongside of Cikapundung River

Based on data of West Java Environmental Protection Agency in 2003 it is known that from 183.105 Ha of total area in Kelurahan Batununggal is settled by 12.109 people so that in every hectare has 66 people which settled in that area. Furthermore, with the density and limited of land has stimulated the growth of slum settlements area in alongside of Cikapundung River. The condition already showed that community which lived in alongside of Cikapundung River has a limitation to improve their quality of life because of lack many kind facilities especially sanitation facilities system. Moreover, mostly people who lived in that area are poor people with lower income and it is represented by their social and cultural behavior. The social norms which tend easier to break and poverty culture that can be seen from skeptic and aphetic behavior but in other hand that social and cultural behavior has already created a unique and different social cohesion than other community, especially in community level organization, house holding and sense of public domain which very close such as in providing clean water, garbage storage, people's cooperation when the flood occurred, etc. The description about slum settlements area in Cikapundung River can be viewed in Picture 4.

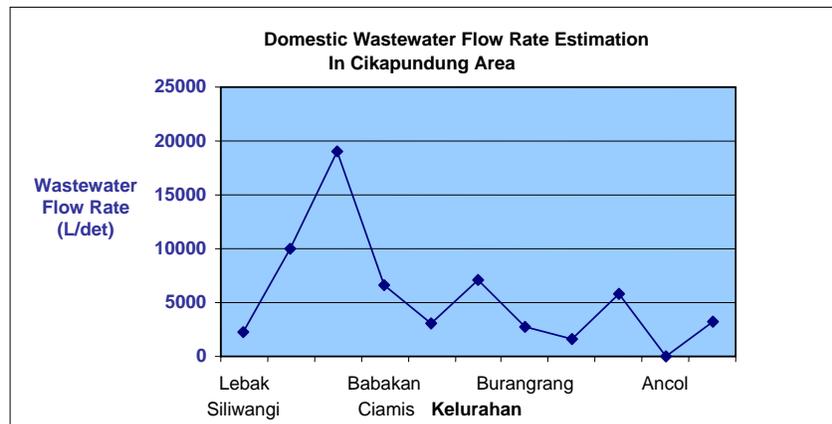


Picture 4. The Condition of Slum settlements Area in Cikapundung River

The disparity between the population number and environmental carrying capacities and also social and cultural characteristic from the local community in Cikapundung Area has brought many kinds of problems such as: a) Many kind of existing buildings made a difficulty to arrange

the area in alongside river, b) The behavior from local community especially in disposing their wastewater and solid waste directly into the river, c) Mostly with the building density and land limited made a difficult to build a septic tank in every house.

Based on West Java Environmental Protection Agency in 2003, it is known that the total number of domestic wastewater which is disposed to Cikapundung River is about 2.496.802,30 litres/day and it is estimated that the number will increase continuously. The estimation of domestic wastewater flow rate can be viewed in picture 5.



Picture 5. Domestic Wastewater Flow Rate In Cikapundung Area

The high amount of wastewater has caused high water pollution in Cikapundung River such as bad odor, diseases like cholera, diarrhea, etc, sewerage clogging and flooding and is caused by behavior from local community itself, which still dispose their domestic wastewater and solid waste directly into Cikapundung River. Thus, regarding to the social and culture condition from local community which still has lack of environmental awareness and limitation to improve their quality of life, West Java Environmental Protection Agency together with the local community has a cooperation to improve water quality in Cikapundung River by using Tangki AG.

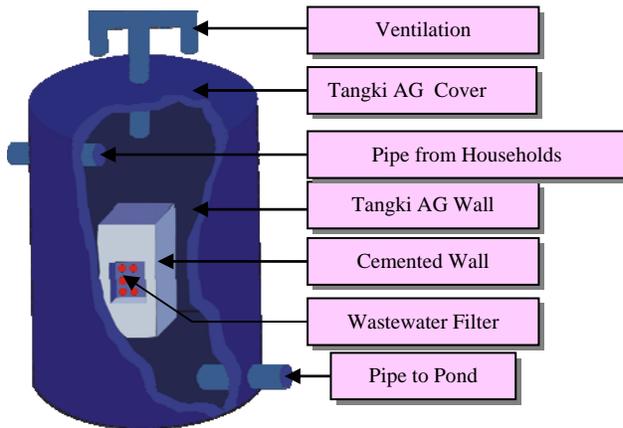
3. Cooperation mechanism

Based on social and culture characteristic in slum settlements area which has an unique and different social cohesion, the cooperation mechanism done by West Java Environmental Protection Agency is implemented by involving participation from local community as a way to build an environmental awareness, such as: a) To socialize environmental friendly living way, b) To change bad habit from community which usually dispose their wastewater and solid waste into collecting it, with supported by the availability of good sanitation (like septic tank), c) To maintain existing drainage to create a clean and health environment.

Furthermore, the involvement of local community in Tangki AG development process is purposed to build sense of belonging among local community toward wastewater treatment plant that will be built. The local community is involved from planning, organizing and controlling until actuating process, such as: a) Holding public meeting which involving local community and organization to discuss a development process, b) Holding communal work to build tank and ponds, c) Installing the central pipe to wastewater treatment plant (Tangki AG). The cooperation mechanism process until it is established can be viewed in Picture 6, 7 and 8.



Picture 6. Cooperation Mechanism Activity with Local Community



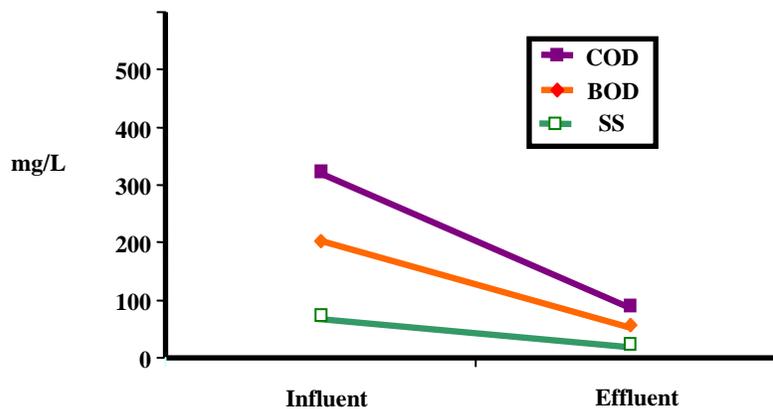
Picture 7. Tangki AG Construction



Picture 8. Tangki AG

Tangki AG consist of a network of collecting pipes laid beneath footpaths or below existing drains running along walkways through the communities. Treatment plants are constructed from concrete, plastered brick tanks and chambers. Some of those facilities are covered with light sheet metal shutters. The function of Tangki AG is to collect and treat wastewater from households and then disposing it to the river so that it will help to reduce the water pollution which derived from households.

Finally, the Tangki AG development process has already given a significant contribution to improve water quality and surrounding environment in Cikapundung River. The existing condition can be viewed from the decreasing of BOD and COD as described in Picture 9.



Picture 9. Tangki AG Effluent Quality

4. Conclusion

The conversion of land use as a consequence from disparity between facility demand and land provision has already brought many kinds of problems in cities, especially in Bandung City. One of the manifestation of that problems is the growth of slum settlements area in alongside of Cikapundung River. Furthermore, with the density of building and social culture characteristics from the people which still has a lack of environmental awareness has caused a high amount of water pollution in Cikapundung River. Because of that, West Java Environmental Protection Agency together with local community build a Community-Based Sewerage System with Tangki AG. The cooperation mechanism is done by involving the local community in all processes which are started from planning, organizing and controlling until actuating. Moreover, with the unique and different social cohesion of people like their close relationship each other made the process becomes successfully and it can be viewed from the decreasing of water pollution index in Cikapundung River.

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